

ASE-3315

Apollo Alpha Particle Spectrometer Data Analysis Summary Report
Contract NAS9-9982

APOLLO ALPHA PARTICLE SPECTROMETER
Data Analysis

PRINCIPAL INVESTIGATOR'S REPORT

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Prepared for:

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Lyndon B. Johnson Space Center
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Approved: Paul Gorenstein
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PREFACE

This document is the final report for contract NAS9-9982, Data Reduction and Analysis. The work statement of this contract was to reduce and analyze data obtained by the alpha particle spectrometer flown onboard Apollo 15 and Apollo 16.

A number of publications have appeared in major scientific journals as a result of work done under this contract. The popular press has also taken note of the results.

1.0 INTRODUCTION

The function of the alpha spectrometer is to detect and measure the energies of alpha particles emitted by the radon isotopes and their daughter products. The sensing elements are 10 totally depleted silicon surface-barrier detectors, each approximately 100 μm thick, having 3 cm^2 of active area and a 90° field of view, and operating at a -50-V bias. Additional gold, aluminum, and nickel layers are used at the contacts to ensure that exposure to visible light will not degrade the experiment performance. The thickness of the detectors was chosen so that any background protons (deuterons or tritons) would produce an output pulse of less than that for a 5-MeV alpha particle, while the output for alpha particles up to 12 MeV would be linearly proportional to energy. This design precludes the necessity for discriminating against other particles in any other way.

The 10 detector preamplifier outputs are merged in a single summing amplifier and processed by a single analog-to-digital converter (ADC). Although the use of one ADC minimizes the complexity of the hardware, the noise from all 10 preamplifiers is summed, resulting in a resolution degradation of a factor of approximately 3. To circumvent this problem, each preamplifier has a bias offset corresponding to 350 keV. This offset effectively removes the noise, except from the preamplifiers that are giving a signal pulse, and allows the use of a single ADC without significant degradation in resolution.

The ADC converts the energy pulse into a 9-bit digital signal. If the most significant bit is a 1, the ADC is disabled and the digital signal held until the next telemetry read-out (every 100 Msec). If the most significant bit is zero, the ADC is reset, and the next

pulse is processed. This design allows the instrument to digitize to a 9-bit accuracy and transmit only 8 bits. Therefore, only the upper half of the digitized energy range is telemetered. Physically, this is reasonable because the alpha energies of interest range from 5.3 to 8.8 MeV; also, the usage of telemetry time by any low-energy background is prevented. The actual telemetered energy range of the instrument was 4.7 to 9.1 MeV. Parallel circuitry generates an analog signal of 0.25 to 4.75 V in steps of 0.5 V; this signal identifies the detector that originated any given pulse.

Because the digital telemetry is limited to 80 bits/sec (10 counts/sec), an additional circuit is used that generates an analog signal proportional to the time from the end of one telemetry read cycle to the sensing of the first pulse with energy greater than 4.7 MeV. This signal allows the dead-time correction of the data if the count rate exceeds approximately 20 counts/sec. Exclusive of house-keeping, the output consists of an 8-bit energy word, an analog voltage identifying the detector, and an analog voltage exponentially proportional to the count rate.

2.0 INSTRUMENT PERFORMANCE

The Apollo 15 spectrometer was turned on at 15:47 GMT on 29 July 1971 and remained on until 12:43 GMT on 7 August 1971, except for short periods during major burns and during water and urine dumps. The spectrometer functioned as expected during this period except for short noise bursts in two detectors. This caused approximately a 10% reduction in sensitivity in about 20% of the data. Because the loss of sensitivity was minimal and confined to a small amount of data, there was little or no effect on the overall capability of the experiment.

The Apollo 16 spectrometer was activated at approximately 02:00 GMT on 20 April 1972 and remained on during the remainder of the mission except for periods during major burns, water or urine dumps, and those periods when the mission significantly deviated from the nominal time line. The spectrometer functioned as expected throughout the total mission.

3.0 DATA REDUCTION

The telemetered data was sent directly from the Manned Spacecraft Center to AS&E for processing. Three types of tapes were used: (1) digital alpha spectrometer data, (2) trajectory data (derived from tracking information by MSC), and (3) standard SIM support tapes. The number of each type of tape received is given below:

Apollo 15

Data Tapes	50
Trajectory Tapes	13
SIM Support Tapes	<u>62</u>
TOTAL	125

Apollo 16

Data Tapes	60
Trajectory Tapes	10
SIM Support Tapes	<u>62</u>
TOTAL	132

Total Apollo 15 and Apollo 16	257
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The SIM support tapes were required only for engineering purposes in case of abnormal behavior of the instruments. Since both instruments operated normally, the SIM support tapes were cataloged and stored only. The ephemeris tapes are normally used in routine processing. Selected data words were chosen from the supplied tapes and rewritten on a time merged working tape. The data selection was made to optimize the search time required during routine processing.

The spectrometer data tapes required significantly more processing to produce tapes usable for routine data reduction. Each tape individually had to be read, bad telemetry data removed, time back-ups and overlaps corrected, data skew detected and corrected if necessary, and housekeeping data verified and flagged if out of specification. After this pre-processing, the data tapes were time merged to produce two time continuous tapes with only good, corrected data.

At this point the data were scanned to look for systematic drifts due to temperature variations. A set of empirical temperature corrections of the gain were generated. The data could then be searched for the alpha decay products of radon.

The computer programs generated during this phase were:

1. A pre-processing program used to verify validity of data and make any required formatting corrections.
2. A summary program which reads data tapes and summarizes the data and experiment configuration in 5 minute intervals.
3. A summary program for the ephemeris tapes with hard copy capability.
4. A general purpose tape merging routine to create a single time sequential tape from several tapes.
5. An overlay program capable of combining data from specified time and/or longitude intervals.
6. An overlay program capable of combining data in $10^0 \times 10^0$ bins.

4.0 DATA REPORTING

The data were reported to the technical and scientific community in the following papers:

1. P. Gorenstein and P. Bjorkholm, "Alpha Particle Spectrometer Experiment" Apollo 15 Preliminary Science Report (NASA SP-289) Chapter 18, 1972.
2. P. Gorenstein and P. Bjorkholm, "Alpha Particle Spectrometer Experiment" Apollo 16 Preliminary Science Report (NASA SP-315) Chapter 20, 1973.
3. P. Gorenstein and P. Bjorkholm, "Detection of Radon Emanation from the Crater Aristarchus by the Apollo 15 Alpha Particle Spectrometer" Science 179, 792, 1973.
4. P. Bjorkholm, L. Golub, and P. Gorenstein, "Detection of a Non-Uniform Distribution of ^{210}Po on the Moon with the Apollo 16 Alpha Particle Spectrometer" Science 180, 957, 1973.
5. P. Gorenstein and P. Bjorkholm, "Observation of Lunar Radon Emanation with the Apollo 15 Alpha Particle Spectrometer" Proceedings of the Third Lunar Science Conference (Supplement 3, Geochimica et Cosmochimica Acta) Vol. 3, pp. 3179-3187, 1972.
6. P. Bjorkholm, L. Golub and P. Gorenstein, "Distribution of ^{222}Rn and ^{210}Po on the Lunar Surface as Observed by the Alpha Particle Spectrometer" Proceedings of the Fourth Lunar Science Conference (in press), 1973.
7. P. Gorenstein, L. Golub, and P. Bjorkholm, "Spatial Features and Temporal Variability in the Emission of Radon from the Moon: An Interpretation of Results from the Alpha Particle

Spectrometer" Proceedings of the Fourth Lunar Science Conference (in press), 1973.

8. P. Bjorkholm, L. Golub, and P. Gorenstein, "Detection of Present-Day Activity at the Edges of Lunar Maria with the Apollo Alpha Particle Spectrometer" Science (to be submitted), 1973.
9. P. Gorenstein, L. Golub, and P. Bjorkholm, "Radon Emanation from the Moon, Spatial and Temporal Variability" The Moon (in press), 1973.
10. P. Gorenstein, L. Golub, and P. Bjorkholm, "Radon Emanation from the Moon - Spatial and Temporal Variability" Proceedings of COSPAR Meeting, Konstanz, 1973.

Results of the experiment were presented orally at:

1. The Third Lunar Science Conference.
2. The Fourth Lunar Science Conference.
3. Committee on Space Research, Madrid, 1972.
4. Committee on Space Research, Konstanz, 1973.
5. Apollo 15 Investigators Meeting.
6. Lunar Science Institute, December 1971.
7. Lunar Science Institute Meeting, January 1973.
8. American Nuclear Society Meeting, Las Vegas, 1972.

These results were noted and commented on in the non-technical press by the following:

1. New York Times News Service, appeared in the New York Times on Thursday, 22 February 1973.
2. Sky and Telescope, May 1973, p. 277-8.
3. National Geographic (in press).

5.0 SUBMITTAL OF DATA TO THE NATIOANL SPACE SCIENCE DATA CENTER

On 7 November 1972 the submittal of the alpha particle spectrometer data to the National Space Science Data Center was initiated. By 30 November 1972 the submittal was complete. Included in the transmittal were:

1. An instrument description.
2. Processed telemetry data from Apollo 15.
3. Processed telemetry data from Apollo 16.
4. Format description of data files.
5. Instructions for temperature correction of data.
6. Empirical temperature correction coefficients for the Apollo 15 instrument.
7. Empirical temperature correction coefficients for the Apollo 16 instruments.
8. Mission profile of instrument status for Apollo 15.
9. Mission profile of instrument status for Apollo 16.
10. Documentation of data records for Apollo 15.
11. Documentation of data records for Apollo 16.

Copies of items 4 - 11 inclusive are included on the following pages.

A15

AMERICAN SCIENCE AND ENGINEERING APOLLO ALPHA EXPERIMENT DATA REDUCTION SYSTEM

FILE 1 COPIED	900 RECORDS FROM	74:09:35.045 TO	74:24:33.177
FILE 1 COPIED	900 RECORDS FROM	74:24:34.177 TO	74:39:32.312
FILE 1 COPIED	281 RECORDS FROM	74:39:33.311 TO	74:44:13.043
FILE 1 COPIED	802 RECORDS FROM	74:44:14.043 TO	74:57:34.276
FILE 1 COPIED	900 RECORDS FROM	75:12:36.417 TO	75:27:34.562
FILE 1 COPIED	900 RECORDS FROM	75:27:35.561 TO	75:42:33.710
FILE 1 COPIED	111 RECORDS FROM	75:42:34.709 TO	75:44:24.604
FILE 1 COPIED	791 RECORDS FROM	75:44:24.605 TO	75:57:33.361
FILE 1 COPIED	1800 RECORDS FROM	75:57:34.359 TO	76:27:32.172
FILE 1 COPIED	970 RECORDS FROM	76:27:33.171 TO	76:43:41.262
FILE 1 COPIED	900 RECORDS FROM	76:44:22.229 TO	76:59:20.396
FILE 1 COPIED	900 RECORDS FROM	76:59:21.395 TO	77:14:19.563
FILE 1 COPIED	522 RECORDS FROM	77:14:33.551 TO	77:23:14.071
FILE 1 COPIED	799 RECORDS FROM	79:10:59.734 TO	79:24:17.064
FILE 1 COPIED	101 RECORDS FROM	79:24:23.059 TO	79:26:02.976
FILE 1 COPIED	75 RECORDS FROM	79:26:03.975 TO	79:27:17.914
FILE 1 COPIED	824 RECORDS FROM	79:27:21.009 TO	79:41:04.223
FILE 1 COPIED	900 RECORDS FROM	79:41:05.222 TO	79:56:03.476
FILE 1 COPIED	899 RECORDS FROM	79:56:04.475 TO	80:11:01.733
FILE 1 COPIED	511 RECORDS FROM	80:11:03.731 TO	80:17:34.304
FILE 1 COPIED	2 RECORDS FROM	80:19:37.302 TO	80:19:39.300
FILE 1 COPIED	2 RECORDS FROM	80:19:41.298 TO	80:19:43.257
FILE 1 COPIED	897 RECORDS FROM	81:11:16.718 TO	81:26:11.969
FILE 1 COPIED	900 RECORDS FROM	81:26:12.967 TO	81:41:11.217
FILE 1 COPIED	240 RECORDS FROM	81:41:12.216 TO	81:45:11.013
FILE 1 COPIED	835 RECORDS FROM	81:45:12.016 TO	81:59:05.325
FILE 1 COPIED	899 RECORDS FROM	81:59:06.324 TO	82:14:03.581
FILE 1 COPIED	221 RECORDS FROM	82:14:04.580 TO	82:17:44.396
FILE 1 COPIED	4 RECORDS FROM	82:17:46.394 TO	82:17:49.392
FILE 1 COPIED	6 RECORDS FROM	82:17:51.390 TO	82:17:56.426
FILE 1 COPIED	2 RECORDS FROM	82:18:33.355 TO	82:18:34.355
FILE 1 COPIED	108 RECORDS FROM	82:18:36.353 TO	82:20:23.267
FILE 1 COPIED	84 RECORDS FROM	82:20:25.265 TO	82:21:43.196
FILE 1 COPIED	1800 RECORDS FROM	83:46:04.090 TO	84:16:03.593
FILE 1 COPIED	116 RECORDS FROM	84:16:04.592 TO	84:17:59.387
FILE 1 COPIED	744 RECORDS FROM	84:17:59.487 TO	84:30:21.794
FILE 1 COPIED	783 RECORDS FROM	84:30:22.792 TO	84:43:24.037
FILE 1 COPIED	115 RECORDS FROM	84:43:42.070 TO	84:45:35.966
FILE 1 COPIED	900 RECORDS FROM	84:45:36.965 TO	85:00:35.139
FILE 1 COPIED	29 RECORDS FROM	85:00:36.137 TO	85:01:04.111
FILE 1 COPIED	899 RECORDS FROM	90:59:35.429 TO	91:14:32.630
FILE 1 COPIED	900 RECORDS FROM	91:14:33.679 TO	91:29:31.933
FILE 1 COPIED	519 RECORDS FROM	91:29:32.932 TO	91:33:10.503
FILE 1 COPIED	724 RECORDS FROM	91:33:11.502 TO	91:50:13.905
FILE 1 COPIED	141 RECORDS FROM	105:47:15.703 TO	105:49:35.586
FILE 1 COPIED	188 RECORDS FROM	105:49:45.578 TO	105:52:52.422
FILE 1 COPIED	1059 RECORDS FROM	106:06:55.268 TO	106:24:32.373
FILE 1 COPIED	1 RECORDS FROM	107:02:56.450 TO	107:02:56.450
FILE 1 COPIED	2703 RECORDS FROM	107:02:59.448 TO	107:48:00.648
FILE 1 COPIED	2820 RECORDS FROM	107:48:02.647 TO	108:35:04.830
FILE 1 COPIED	1853 RECORDS FROM	108:35:07.827 TO	109:05:52.237
FILE 1 COPIED	445 RECORDS FROM	109:06:00.286 TO	109:13:23.918
FILE 1 COPIED	2038 RECORDS FROM	112:09:04.195 TO	112:41:59.496
FILE 1 COPIED	1362 RECORDS FROM	112:42:00.495 TO	113:04:40.370
FILE 1 COPIED	900 RECORDS FROM	113:27:57.172 TO	113:42:55.411
FILE 1 COPIED	900 RECORDS FROM	113:42:57.437 TO	113:57:55.705
FILE 1 COPIED	572 RECORDS FROM	113:57:56.704 TO	114:07:27.226
FILE 1 COPIED	440 RECORDS FROM	114:07:15.124 TO	114:16:33.756
FILE 1 COPIED	891 RECORDS FROM	114:28:30.158 TO	114:43:19.418

FILE 1 COPIED	570	RECORDS FROM	114:43:30.409	TO	114:52:50.926
FILE 1 COPIED	794	RECORDS FROM	114:53:00.935	TO	115:06:13.200
FILE 1 COPIED	2517	RECORDS FROM	115:25:05.044	TO	116:06:50.030
FILE 1 COPIED	3547	RECORDS FROM	116:07:02.245	TO	117:06:07.295
FILE 1 COPIED	2603	RECORDS FROM	117:21:36.531	TO	118:04:56.370
FILE 1 COPIED	1800	RECORDS FROM	118:11:01.056	TO	118:40:53.560
FILE 1 COPIED	1347	RECORDS FROM	118:40:59.558	TO	119:03:24.449
FILE 1 COPIED	1800	RECORDS FROM	119:14:29.357	TO	119:44:26.363
FILE 1 COPIED	993	RECORDS FROM	119:44:27.361	TO	120:00:59.037
FILE 1 COPIED	493	RECORDS FROM	120:00:59.578	TO	120:09:11.165
FILE 1 COPIED	1651	RECORDS FROM	120:09:11.167	TO	120:36:30.792
FILE 1 COPIED	703	RECORDS FROM	120:51:40.048	TO	121:03:21.472
FILE 1 COPIED	2696	RECORDS FROM	121:10:49.091	TO	121:55:41.362
FILE 1 COPIED	203	RECORDS FROM	121:55:43.362	TO	121:59:05.684
FILE 1 COPIED	1	RECORDS FROM	122:04:13.426	TO	122:04:13.426
FILE 1 COPIED	7	RECORDS FROM	122:04:21.423	TO	122:04:27.418
FILE 1 COPIED	812	RECORDS FROM	122:04:37.410	TO	122:13:07.732
FILE 1 COPIED	2703	RECORDS FROM	122:19:00.687	TO	123:04:00.448
FILE 1 COPIED	504	RECORDS FROM	123:18:20.192	TO	123:26:42.775
FILE 1 COPIED	2107	RECORDS FROM	124:15:48.859	TO	124:50:53.109
FILE 1 COPIED	31	RECORDS FROM	124:52:07.454	TO	124:52:37.483
FILE 1 COPIED	498	RECORDS FROM	124:52:39.487	TO	125:00:59.074
FILE 1 COPIED	32	RECORDS FROM	126:33:25.989	TO	126:33:59.962
FILE 1 COPIED	9	RECORDS FROM	126:34:01.960	TO	126:34:13.950
FILE 1 COPIED	1	RECORDS FROM	126:34:15.948	TO	126:34:15.948
FILE 1 COPIED	2	RECORDS FROM	126:34:19.146	TO	126:34:20.944
FILE 1 COPIED	13	RECORDS FROM	126:34:22.942	TO	126:34:33.931
FILE 1 COPIED	4	RECORDS FROM	126:34:37.930	TO	126:34:40.927
FILE 1 COPIED	124	RECORDS FROM	126:34:42.926	TO	126:36:50.320
FILE 1 COPIED	209	RECORDS FROM	126:36:52.318	TO	126:40:21.645
FILE 1 COPIED	454	RECORDS FROM	126:40:23.643	TO	126:47:56.269
FILE 1 COPIED	572	RECORDS FROM	126:56:08.359	TO	127:05:39.362
FILE 1 COPIED	1217	RECORDS FROM	127:05:41.360	TO	127:25:56.365
FILE 1 COPIED	417	RECORDS FROM	127:40:56.620	TO	127:47:52.279
FILE 1 COPIED	1808	RECORDS FROM	127:49:35.198	TO	128:19:40.693
FILE 1 COPIED	2185	RECORDS FROM	128:19:44.688	TO	128:56:09.881
FILE 1 COPIED	4541	RECORDS FROM	129:29:11.661	TO	130:44:49.453
FILE 1 COPIED	693	RECORDS FROM	130:44:51.452	TO	130:56:22.378
FILE 1 COPIED	1	RECORDS FROM	132:52:44.070	TO	132:52:44.070
FILE 1 COPIED	2	RECORDS FROM	132:52:46.069	TO	132:52:47.068
FILE 1 COPIED	6	RECORDS FROM	132:52:49.066	TO	132:52:54.062
FILE 1 COPIED	8	RECORDS FROM	132:52:57.041	TO	132:53:03.055
FILE 1 COPIED	5	RECORDS FROM	132:53:05.053	TO	132:53:09.050
FILE 1 COPIED	1	RECORDS FROM	132:53:11.048	TO	132:53:11.048
FILE 1 COPIED	1	RECORDS FROM	132:53:13.046	TO	132:53:13.046
FILE 1 COPIED	1	RECORDS FROM	132:53:15.045	TO	132:53:15.045
FILE 1 COPIED	51	RECORDS FROM	132:53:17.043	TO	132:54:07.002
FILE 1 COPIED	1712	RECORDS FROM	133:07:31.804	TO	133:36:01.382
FILE 1 COPIED	526	RECORDS FROM	133:48:42.278	TO	133:57:26.839
FILE 1 COPIED	897	RECORDS FROM	134:00:11.700	TO	134:15:09.951
FILE 1 COPIED	1884	RECORDS FROM	134:15:12.948	TO	134:46:34.390
FILE 1 COPIED	1206	RECORDS FROM	135:38:46.787	TO	135:53:50.780
FILE 1 COPIED	399	RECORDS FROM	135:53:50.781	TO	136:05:26.449
FILE 1 COPIED	4375	RECORDS FROM	136:05:30.448	TO	137:13:22.286
FILE 1 COPIED	703	RECORDS FROM	137:18:25.284	TO	137:30:06.701
FILE 1 COPIED	296	RECORDS FROM	137:46:22.407	TO	137:51:13.157
FILE 1 COPIED	3073	RECORDS FROM	137:51:20.156	TO	138:42:29.604
FILE 1 COPIED	2950	RECORDS FROM	138:42:57.067	TO	139:32:04.616
FILE 1 COPIED	665	RECORDS FROM	139:44:26.513	TO	139:55:29.956
FILE 1 COPIED	879	RECORDS FROM	139:56:10.922	TO	140:10:43.191

FILE 1 COPIED	1839	RECORDS FROM	140:10:53.137	TO	140:41:30.665
FILE 1 COPIED	2603	RECORDS FROM	140:41:49.136	TO	141:25:00.973
FILE 1 COPIED	2593	RECORDS FROM	141:37:29.974	TO	142:20:40.715
FILE 1 COPIED	1321	RECORDS FROM	142:20:45.710	TO	142:42:44.620
FILE 1 COPIED	500	RECORDS FROM	142:42:49.100	TO	142:51:07.635
FILE 1 COPIED	399	RECORDS FROM	142:51:09.634	TO	142:57:47.353
FILE 1 COPIED	900	RECORDS FROM	142:57:52.349	TO	143:12:50.602
FILE 1 COPIED	899	RECORDS FROM	143:12:52.601	TO	143:27:40.855
FILE 1 COPIED	170	RECORDS FROM	143:27:51.853	TO	143:30:40.713
FILE 1 COPIED	4583	RECORDS FROM	143:31:45.178	TO	144:48:05.850
FILE 1 COPIED	2408	RECORDS FROM	144:48:07.349	TO	145:23:12.849
FILE 1 COPIED	888	RECORDS FROM	145:39:59.783	TO	145:54:56.000
FILE 1 COPIED	1798	RECORDS FROM	145:54:58.033	TO	146:24:54.543
FILE 1 COPIED	504	RECORDS FROM	146:38:47.329	TO	146:47:12.908
FILE 1 COPIED	1269	RECORDS FROM	146:47:14.907	TO	147:08:21.853
FILE 1 COPIED	21	RECORDS FROM	147:27:32.397	TO	147:27:52.880
FILE 1 COPIED	157	RECORDS FROM	147:40:26.773	TO	147:43:02.642
FILE 1 COPIED	1640	RECORDS FROM	147:43:04.641	TO	148:10:22.276
FILE 1 COPIED	1476	RECORDS FROM	148:10:25.273	TO	148:35:00.054
FILE 1 COPIED	72	RECORDS FROM	148:35:04.051	TO	148:36:14.992
FILE 1 COPIED	2341	RECORDS FROM	148:36:18.989	TO	149:15:18.025
FILE 1 COPIED	3	RECORDS FROM	149:32:16.192	TO	149:32:18.190
FILE 1 COPIED	4636	RECORDS FROM	149:32:21.187	TO	150:50:23.777
FILE 1 COPIED	1800	RECORDS FROM	150:50:37.765	TO	151:20:35.271
FILE 1 COPIED	1799	RECORDS FROM	151:25:23.549	TO	151:55:20.048
FILE 1 COPIED	2304	RECORDS FROM	151:55:22.047	TO	152:23:44.140
FILE 1 COPIED	1349	RECORDS FROM	152:37:16.445	TO	152:59:43.326
FILE 1 COPIED	879	RECORDS FROM	152:59:52.317	TO	153:14:29.588
FILE 1 COPIED	2155	RECORDS FROM	153:31:02.280	TO	154:06:54.487
FILE 1 COPIED	54	RECORDS FROM	154:06:56.485	TO	154:07:50.442
FILE 1 COPIED	1267	RECORDS FROM	154:07:52.440	TO	154:28:57.391
FILE 1 COPIED	2577	RECORDS FROM	154:45:50.031	TO	155:28:43.891
FILE 1 COPIED	3413	RECORDS FROM	155:29:01.389	TO	156:25:51.555
FILE 1 COPIED	2533	RECORDS FROM	156:39:35.356	TO	157:21:45.253
FILE 1 COPIED	3435	RECORDS FROM	157:26:24.530	TO	158:23:36.681
FILE 1 COPIED	2569	RECORDS FROM	158:41:29.276	TO	159:24:15.462
FILE 1 COPIED	1778	RECORDS FROM	159:24:16.650	TO	159:53:55.168
FILE 1 COPIED	843	RECORDS FROM	160:02:00.763	TO	160:16:02.068
FILE 1 COPIED	20	RECORDS FROM	160:28:09.955	TO	160:28:23.939
FILE 1 COPIED	2572	RECORDS FROM	160:34:48.623	TO	161:17:38.339
FILE 1 COPIED	2184	RECORDS FROM	161:37:39.995	TO	162:14:03.184
FILE 1 COPIED	2	RECORDS FROM	162:14:05.183	TO	162:14:06.182
FILE 1 COPIED	2260	RECORDS FROM	162:39:39.908	TO	163:17:17.031
FILE 1 COPIED	2637	RECORDS FROM	163:21:47.787	TO	164:05:42.594
FILE 1 COPIED	673	RECORDS FROM	165:21:20.148	TO	165:32:32.581
FILE 1 COPIED	2244	RECORDS FROM	165:44:38.974	TO	166:22:00.116
FILE 1 COPIED	801	RECORDS FROM	166:41:23.653	TO	166:54:42.987
FILE 1 COPIED	153	RECORDS FROM	167:15:35.437	TO	167:18:07.310
FILE 1 COPIED	2223	RECORDS FROM	167:18:13.301	TO	167:55:19.453
FILE 1 COPIED	1289	RECORDS FROM	167:55:22.448	TO	168:16:49.386
FILE 1 EOF					

182014 RECORDS WRITTEN ON OUTPUT FILE

AMERICAN SCIENCE AND ENGINEERING APOLLO ALPHA EXPERIMENT DATA PRODUCTION SYSTEM

FILE 1 COPIED	6 RECORDS FROM	178:59:41.901 TO	178:59:45.397
FILE 1 COPIED	4112 RECORDS FROM	178:59:51.623 TO	180:08:19.468
FILE 1 COPIED	2053 RECORDS FROM	180:35:29.613 TO	181:09:40.904
FILE 1 COPIED	2838 RECORDS FROM	181:11:54.230 TO	181:59:53.873
FILE 1 COPIED	5 RECORDS FROM	182:00:00.878 TO	182:00:04.374
FILE 1 COPIED	2709 RECORDS FROM	182:00:24.858 TO	182:45:31.504
FILE 1 COPIED	1182 RECORDS FROM	183:02:36.747 TO	183:22:16.759
FILE 1 COPIED	1422 RECORDS FROM	183:22:18.757 TO	183:45:53.573
FILE 1 COPIED	754 RECORDS FROM	183:46:01.573 TO	183:58:33.950
FILE 1 COPIED	4406 RECORDS FROM	184:53:46.941 TO	186:12:12.786
FILE 1 COPIED	890 RECORDS FROM	186:27:32.021 TO	186:42:20.281
FILE 1 COPIED	283 RECORDS FROM	186:58:20.972 TO	187:03:02.737
FILE 1 COPIED	58 RECORDS FROM	187:03:04.735 TO	187:04:01.637
FILE 1 COPIED	1359 RECORDS FROM	187:04:03.686 TO	187:26:40.555
FILE 1 COPIED	1 RECORDS FROM	187:26:42.872 TO	187:26:42.872
FILE 1 COPIED	213 RECORDS FROM	187:27:34.491 TO	187:31:06.315
FILE 1 COPIED	1579 RECORDS FROM	187:31:09.312 TO	187:57:28.003
FILE 1 COPIED	893 RECORDS FROM	187:57:29.528 TO	188:12:26.782
FILE 1 COPIED	899 RECORDS FROM	188:12:28.780 TO	188:27:26.033
FILE 1 COPIED	1160 RECORDS FROM	188:27:28.032 TO	188:46:46.068
FILE 1 COPIED	2420 RECORDS FROM	188:46:59.533 TO	189:27:16.511
FILE 1 COPIED	1632 RECORDS FROM	189:27:19.508 TO	189:54:29.686
FILE 1 COPIED	6 RECORDS FROM	189:54:35.681 TO	189:54:40.677
FILE 1 COPIED	1724 RECORDS FROM	189:54:42.676 TO	190:23:24.244
FILE 1 COPIED	233 RECORDS FROM	190:38:24.495 TO	190:43:06.260
FILE 1 COPIED	3010 RECORDS FROM	190:54:37.157 TO	191:44:43.653
FILE 1 COPIED	774 RECORDS FROM	191:44:45.652 TO	191:57:38.540
FILE 1 COPIED	564 RECORDS FROM	191:57:40.539 TO	192:07:03.071
FILE 1 COPIED	899 RECORDS FROM	192:54:33.172 TO	193:09:30.422
FILE 1 COPIED	1118 RECORDS FROM	193:09:34.419 TO	193:28:10.493
FILE 1 COPIED	4276 RECORDS FROM	193:28:46.462 TO	194:40:02.435
FILE 1 COPIED	1179 RECORDS FROM	194:44:31.690 TO	195:04:08.708
FILE 1 COPIED	1606 RECORDS FROM	195:04:10.706 TO	195:30:55.375
FILE 1 COPIED	237 RECORDS FROM	195:31:19.357 TO	195:35:15.158
FILE 1 COPIED	3037 RECORDS FROM	195:51:36.346 TO	196:42:11.342
FILE 1 COPIED	3846 RECORDS FROM	196:42:45.796 TO	197:46:51.594
FILE 1 COPIED	2703 RECORDS FROM	197:47:40.073 TO	198:32:40.327
FILE 1 COPIED	237 RECORDS FROM	198:32:42.826 TO	198:36:33.630
FILE 1 COPIED	3010 RECORDS FROM	198:41:36.861 TO	199:31:43.354
FILE 1 COPIED	335 RECORDS FROM	199:31:45.353 TO	199:37:21.073
FILE 1 COPIED	3546 RECORDS FROM	199:37:24.071 TO	200:36:29.624
FILE 1 COPIED	5 RECORDS FROM	200:36:30.743 TO	200:36:35.589
FILE 1 COPIED	13 RECORDS FROM	200:37:04.620 TO	200:37:16.610
FILE 1 COPIED	2923 RECORDS FROM	200:37:18.603 TO	201:25:58.652
FILE 1 COPIED	2490 RECORDS FROM	201:26:01.651 TO	202:07:31.107
FILE 1 COPIED	5661 RECORDS FROM	202:07:33.106 TO	203:41:52.377
FILE 1 COPIED	2108 RECORDS FROM	204:00:07.489 TO	204:35:13.737
FILE 1 COPIED	297 RECORDS FROM	204:35:15.736 TO	204:40:11.490
FILE 1 COPIED	3344 RECORDS FROM	204:42:20.856 TO	205:38:04.072
FILE 1 COPIED	2408 RECORDS FROM	205:59:38.527 TO	206:39:43.527
FILE 1 COPIED	3409 RECORDS FROM	206:40:17.965 TO	207:37:05.131
FILE 1 COPIED	1414 RECORDS FROM	207:52:04.913 TO	208:15:37.742
FILE 1 COPIED	1243 RECORDS FROM	208:15:39.742 TO	208:36:20.710
FILE 1 COPIED	3437 RECORDS FROM	208:38:41.058 TO	209:35:56.203
FILE 1 COPIED	2627 RECORDS FROM	209:50:56.871 TO	210:34:40.690
FILE 1 COPIED	2020 RECORDS FROM	210:35:17.242 TO	211:03:54.563
FILE 1 COPIED	1632 RECORDS FROM	211:09:06.553 TO	211:36:16.205
FILE 1 COPIED	6570 RECORDS FROM	211:49:28.076 TO	213:38:58.613
FILE 1 COPIED	3636 RECORDS FROM	213:39:00.612 TO	214:39:33.039

FILE 1 COPIED	3696	RECORDS	FROM	214:39:35.037	TO	215:41:11.516
FILE 1 COPIED	2251	RECORDS	FROM	215:41:13.515	TO	216:18:41.646
FILE 1 COPIED	4117	RECORDS	FROM	216:29:51.539	TO	217:38:24.668
FILE 1 COPIED	2593	RECORDS	FROM	217:38:26.668	TO	218:21:33.359
FILE 1 COPIED	3255	RECORDS	FROM	218:35:57.250	TO	219:30:10.552
FILE 1 COPIED	1275	RECORDS	FROM	219:30:20.085	TO	219:51:35.025
FILE 1 COPIED	971	RECORDS	FROM	219:51:37.024	TO	220:07:46.218
FILE 1 COPIED	3425	RECORDS	FROM	220:18:41.134	TO	221:15:42.238
FILE 1 COPIED	2621	RECORDS	FROM	222:16:34.008	TO	223:02:12.315
FILE 1 COPIED	900	RECORDS	FROM	224:46:02.624	TO	225:01:00.375
FILE 1 COPIED	275	RECORDS	FROM	225:01:03.372	TO	225:05:37.644
FILE 1 COPIED	1696	RECORDS	FROM	225:05:39.642	TO	225:33:53.231
FILE 1 COPIED	1800	RECORDS	FROM	225:33:55.229	TO	226:03:52.731
FILE 1 COPIED	899	RECORDS	FROM	226:03:55.729	TO	226:18:52.981
FILE 1 COPIED	503	RECORDS	FROM	226:18:54.980	TO	226:33:57.229
FILE 1 COPIED	501	RECORDS	FROM	226:34:03.224	TO	226:49:02.475
FILE 1 COPIED	1797	RECORDS	FROM	226:49:04.474	TO	227:13:58.979
FILE 1 COPIED	73	RECORDS	FROM	227:19:01.977	TO	227:20:13.914
FILE 1 COPIED	3378	RECORDS	FROM	227:20:20.912	TO	228:16:35.103
FILE 1 COPIED	734	RECORDS	FROM	228:26:59.532	TO	228:40:01.931
FILE 1 COPIED	109	RECORDS	FROM	228:40:03.924	TO	228:41:56.835
FILE 1 COPIED	901	RECORDS	FROM	228:52:00.332	TO	229:06:59.582
FILE 1 COPIED	837	RECORDS	FROM	229:17:12.071	TO	229:31:09.363
FILE 1 COPIED	50	RECORDS	FROM	229:31:10.372	TO	229:31:59.331
FILE 1 COPIED	870	RECORDS	FROM	229:42:21.312	TO	229:56:51.078
FILE 1 COPIED	871	RECORDS	FROM	230:07:22.552	TO	230:21:51.827
FILE 1 COPIED	821	RECORDS	FROM	230:32:57.273	TO	230:46:36.591
FILE 1 COPIED	840	RECORDS	FROM	230:53:13.019	TO	231:12:11.321
FILE 1 COPIED	876	RECORDS	FROM	231:23:29.756	TO	231:38:04.027
FILE 1 COPIED	866	RECORDS	FROM	231:48:24.511	TO	232:02:43.790
FILE 1 COPIED	835	RECORDS	FROM	232:14:10.223	TO	232:28:03.529
FILE 1 COPIED	888	RECORDS	FROM	232:38:45.994	TO	232:53:34.244
FILE 1 COPIED	887	RECORDS	FROM	233:04:16.709	TO	233:19:01.973
FILE 1 COPIED	859	RECORDS	FROM	233:30:09.417	TO	233:44:26.703
FILE 1 COPIED	905	RECORDS	FROM	233:55:32.160	TO	234:10:35.408
FILE 1 COPIED	861	RECORDS	FROM	234:21:34.360	TO	234:35:54.146
FILE 1 COPIED	349	RECORDS	FROM	234:47:15.580	TO	235:01:22.875
FILE 1 COPIED	942	RECORDS	FROM	235:11:06.390	TO	235:26:46.603
FILE 1 COPIED	2	RECORDS	FROM	235:37:22.080	TO	235:37:23.079
FILE 1 COPIED	891	RECORDS	FROM	235:37:25.077	TO	235:52:16.017
FILE 1 COPIED	837	RECORDS	FROM	236:02:44.814	TO	236:16:40.121
FILE 1 COPIED	470	RECORDS	FROM	236:26:53.610	TO	236:34:42.221
FILE 1 COPIED	106	RECORDS	FROM	236:34:51.214	TO	236:36:36.126
FILE 1 COPIED	3	RECORDS	FROM	236:36:38.125	TO	236:36:40.123
FILE 1 COPIED	1	RECORDS	FROM	236:36:42.121	TO	236:36:42.121
FILE 1 COPIED	1037	RECORDS	FROM	236:39:22.987	TO	236:57:23.066
FILE 1 COPIED	3182	RECORDS	FROM	236:57:55.068	TO	237:50:55.398
FILE 1 COPIED	103	RECORDS	FROM	237:51:00.394	TO	237:52:42.309
FILE 1 COPIED	236	RECORDS	FROM	237:52:44.307	TO	237:56:33.860
FILE 1 COPIED	626	RECORDS	FROM	237:56:42.109	TO	238:07:06.583
FILE 1 COPIED	1893	RECORDS	FROM	238:23:47.755	TO	238:55:20.180
FILE 1 EOF						

169675 RECORDS WRITTEN ON OUTPUT FILE

A16

FILE	COPIED	RECORDS	FROM	TO
FILE 1 COPIED	119	RECORDS	FROM	70:10:12.783 TO 70:10:14.112
FILE 1 COPIED	260	RECORDS	FROM	70:13:31.722 TO 70:13:11.443
FILE 1 COPIED	212	RECORDS	FROM	70:14:56.265 TO 70:14:12.422
FILE 1 COPIED	212	RECORDS	FROM	70:16:47.551 TO 70:22:40.235
FILE 1 COPIED	1120	RECORDS	FROM	70:23:28.019 TO 70:54:32.499
FILE 1 COPIED	1415	RECORDS	FROM	70:55:06.293 TO 71:34:34.757
FILE 1 COPIED	3450	RECORDS	FROM	71:34:26.741 TO 73:12:56.191
FILE 1 COPIED	53	RECORDS	FROM	73:21:39.969 TO 73:23:17.353
FILE 1 COPIED	1935	RECORDS	FROM	73:23:32.293 TO 74:09:27.569
FILE 1 COPIED	8	RECORDS	FROM	74:09:29.550 TO 74:09:39.483
FILE 1 COPIED	2	RECORDS	FROM	74:09:41.478 TO 74:09:42.468
FILE 1 COPIED	3	RECORDS	FROM	74:50:54.870 TO 74:50:56.369
FILE 1 COPIED	2	RECORDS	FROM	74:50:58.867 TO 74:50:59.066
FILE 1 COPIED	3348	RECORDS	FROM	74:51:05.861 TO 75:46:53.180
FILE 1 COPIED	1671	RECORDS	FROM	75:46:52.179 TO 76:14:45.895
FILE 1 COPIED	470	RECORDS	FROM	76:19:12.625 TO 76:25:51.515
FILE 1 COPIED	359	RECORDS	FROM	76:25:53.313 TO 76:31:51.025
FILE 1 COPIED	772	RECORDS	FROM	76:31:53.025 TO 76:44:49.065
FILE 1 COPIED	54	RECORDS	FROM	76:44:47.403 TO 76:45:53.052
FILE 1 COPIED	359	RECORDS	FROM	76:45:52.351 TO 76:51:53.056
FILE 1 COPIED	159	RECORDS	FROM	76:51:52.062 TO 76:54:30.934
FILE 1 COPIED	113	RECORDS	FROM	76:54:32.933 TO 76:55:30.338
FILE 1 COPIED	119	RECORDS	FROM	76:56:32.837 TO 76:58:30.742
FILE 1 COPIED	163	RECORDS	FROM	76:58:32.740 TO 77:01:14.619
FILE 1 COPIED	3414	RECORDS	FROM	77:09:44.193 TO 78:03:35.442
FILE 1 COPIED	5	RECORDS	FROM	78:03:33.543 TO 78:03:42.340
FILE 1 COPIED	11	RECORDS	FROM	78:03:44.336 TO 78:03:54.331
FILE 1 COPIED	33	RECORDS	FROM	78:03:56.329 TO 78:09:28.303
FILE 1 COPIED	803	RECORDS	FROM	78:09:30.302 TO 78:22:51.659
FILE 1 COPIED	23	RECORDS	FROM	78:22:53.657 TO 78:23:15.640
FILE 1 COPIED	412	RECORDS	FROM	78:23:44.117 TO 78:35:34.736
FILE 1 COPIED	2	RECORDS	FROM	79:10:35.347 TO 79:10:36.346
FILE 1 COPIED	750	RECORDS	FROM	79:10:38.075 TO 79:23:14.730
FILE 1 COPIED	1339	RECORDS	FROM	79:51:21.367 TO 80:13:34.302
FILE 1 COPIED	50	RECORDS	FROM	80:13:40.301 TO 80:14:29.261
FILE 1 COPIED	73	RECORDS	FROM	80:14:31.260 TO 80:15:43.197
FILE 1 COPIED	32	RECORDS	FROM	80:15:50.197 TO 80:16:21.171
FILE 1 COPIED	42	RECORDS	FROM	80:16:23.170 TO 80:17:04.136
FILE 1 COPIED	26	RECORDS	FROM	80:17:06.135 TO 80:17:31.114
FILE 1 COPIED	90	RECORDS	FROM	80:17:33.114 TO 80:19:02.042
FILE 1 COPIED	1229	RECORDS	FROM	80:19:04.039 TO 80:39:32.049
FILE 1 COPIED	6	RECORDS	FROM	80:39:34.367 TO 80:39:40.042
FILE 1 COPIED	215	RECORDS	FROM	80:39:43.049 TO 80:43:16.353
FILE 1 COPIED	1148	RECORDS	FROM	80:43:16.354 TO 81:02:26.239
FILE 1 COPIED	3654	RECORDS	FROM	81:07:12.696 TO 82:03:10.744
FILE 1 COPIED	206	RECORDS	FROM	82:29:42.703 TO 82:33:15.102
FILE 1 COPIED	6	RECORDS	FROM	82:33:17.540 TO 82:33:22.536
FILE 1 COPIED	875	RECORDS	FROM	82:33:24.525 TO 82:47:58.830
FILE 1 COPIED	337	RECORDS	FROM	82:48:09.821 TO 82:53:45.549
FILE 1 COPIED	839	RECORDS	FROM	82:53:48.545 TO 83:07:45.373
FILE 1 COPIED	3149	RECORDS	FROM	83:07:47.871 TO 84:02:54.394
FILE 1 COPIED	18	RECORDS	FROM	84:24:39.155 TO 84:24:55.733
FILE 1 COPIED	136	RECORDS	FROM	84:24:59.089 TO 84:27:15.029
FILE 1 COPIED	801	RECORDS	FROM	84:27:18.027 TO 84:40:33.394
FILE 1 COPIED	359	RECORDS	FROM	84:40:40.332 TO 84:46:33.085
FILE 1 COPIED	359	RECORDS	FROM	84:46:40.093 TO 84:52:37.595
FILE 1 COPIED	3708	RECORDS	FROM	84:52:39.804 TO 85:54:05.135
FILE 1 COPIED	60	RECORDS	FROM	85:17:15.728 TO 86:18:14.681
FILE 1 COPIED	40	RECORDS	FROM	86:18:34.664 TO 86:19:13.633

FILE 1 COPIED	47 RECORDS FROM	86:19:15.632 TO	86:20:02.563
FILE 1 COPIED	70 RECORDS FROM	86:20:04.592 TO	86:21:13.537
FILE 1 COPIED	226 RECORDS FROM	86:21:15.535 TO	86:25:00.355
FILE 1 COPIED	502 RECORDS FROM	86:25:19.343 TO	86:35:12.864
FILE 1 COPIED	502 RECORDS FROM	86:35:14.863 TO	86:45:12.385
FILE 1 COPIED	119 RECORDS FROM	86:45:14.384 TO	86:47:12.233
FILE 1 COPIED	119 RECORDS FROM	86:47:14.286 TO	86:49:12.192
FILE 1 COPIED	550 RECORDS FROM	86:49:14.190 TO	86:55:02.911
FILE 1 COPIED	3075 RECORDS FROM	86:57:34.790 TO	87:43:47.334
FILE 1 COPIED	136 RECORDS FROM	88:11:31.239 TO	88:14:35.091
FILE 1 COPIED	7 RECORDS FROM	88:14:38.090 TO	88:14:44.034
FILE 1 COPIED	900 RECORDS FROM	88:14:46.083 TO	88:29:46.340
FILE 1 COPIED	6 RECORDS FROM	88:29:48.363 TO	88:29:53.358
FILE 1 COPIED	723 RECORDS FROM	88:29:55.357 TO	88:41:56.781
FILE 1 COPIED	3089 RECORDS FROM	88:51:46.315 TO	89:43:11.857
FILE 1 COPIED	119 RECORDS FROM	90:06:15.744 TO	90:08:13.650
FILE 1 COPIED	47 RECORDS FROM	90:08:15.649 TO	90:09:02.611
FILE 1 COPIED	670 RECORDS FROM	90:09:04.610 TO	90:20:13.077
FILE 1 COPIED	478 RECORDS FROM	90:20:15.075 TO	90:28:12.695
FILE 1 COPIED	479 RECORDS FROM	90:28:14.693 TO	90:36:12.313
FILE 1 COPIED	239 RECORDS FROM	90:36:14.311 TO	90:40:12.121
FILE 1 COPIED	229 RECORDS FROM	90:40:14.119 TO	90:44:01.930
FILE 1 COPIED	1609 RECORDS FROM	90:45:21.887 TO	91:12:10.603
FILE 1 COPIED	990 RECORDS FROM	91:35:40.471 TO	91:52:00.684
FILE 1 COPIED	521 RECORDS FROM	91:52:11.683 TO	92:00:52.263
FILE 1 COPIED	873 RECORDS FROM	92:00:54.267 TO	92:15:26.573
FILE 1 COPIED	575 RECORDS FROM	92:15:28.572 TO	92:25:02.116
FILE 1 COPIED	2766 RECORDS FROM	105:14:22.542 TO	106:00:25.649
FILE 1 COPIED	3241 RECORDS FROM	106:01:38.145 TO	106:58:06.365
FILE 1 COPIED	238 RECORDS FROM	107:05:53.976 TO	107:09:51.731
FILE 1 COPIED	29 RECORDS FROM	107:09:53.730 TO	107:10:22.753
FILE 1 COPIED	2313 RECORDS FROM	107:10:28.751 TO	107:49:00.866
FILE 1 COPIED	157 RECORDS FROM	107:49:02.864 TO	107:51:33.747
FILE 1 COPIED	22 RECORDS FROM	107:52:08.723 TO	107:52:31.704
FILE 1 COPIED	10 RECORDS FROM	107:52:33.702 TO	107:52:42.695
FILE 1 COPIED	4 RECORDS FROM	107:52:46.692 TO	107:52:49.639
FILE 1 COPIED	1939 RECORDS FROM	107:52:52.637 TO	108:25:09.108
FILE 1 COPIED	1378 RECORDS FROM	108:25:11.106 TO	108:48:06.096
FILE 1 COPIED	2673 RECORDS FROM	109:53:46.572 TO	110:43:21.416
FILE 1 COPIED	5 RECORDS FROM	110:43:25.413 TO	110:43:30.370
FILE 1 COPIED	6 RECORDS FROM	110:43:31.408 TO	110:43:36.404
FILE 1 COPIED	4 RECORDS FROM	110:43:38.402 TO	110:43:41.400
FILE 1 COPIED	1 RECORDS FROM	110:43:43.398 TO	110:43:43.398
FILE 1 COPIED	5 RECORDS FROM	110:43:45.397 TO	110:43:47.394
FILE 1 COPIED	1 RECORDS FROM	110:43:51.392 TO	110:43:51.392
FILE 1 COPIED	2 RECORDS FROM	110:43:54.390 TO	110:43:55.389
FILE 1 COPIED	2 RECORDS FROM	110:43:57.387 TO	110:43:58.386
FILE 1 COPIED	1 RECORDS FROM	110:52:47.944 TO	110:52:47.944
FILE 1 COPIED	16 RECORDS FROM	110:52:49.942 TO	110:53:04.930
FILE 1 COPIED	3 RECORDS FROM	110:53:07.928 TO	110:53:09.926
FILE 1 COPIED	28 RECORDS FROM	110:53:11.924 TO	110:53:30.542
FILE 1 COPIED	5 RECORDS FROM	110:53:40.900 TO	110:53:44.897
FILE 1 COPIED	372 RECORDS FROM	110:53:48.894 TO	111:00:00.594
FILE 1 COPIED	7 RECORDS FROM	111:00:04.352 TO	111:00:10.586
FILE 1 COPIED	1149 RECORDS FROM	111:00:13.585 TO	111:19:20.661
FILE 1 COPIED	793 RECORDS FROM	111:19:24.659 TO	111:32:36.661
FILE 1 COPIED	5 RECORDS FROM	111:32:38.019 TO	111:32:42.016
FILE 1 COPIED	227 RECORDS FROM	111:32:46.014 TO	111:35:32.331
FILE 1 COPIED	1467 RECORDS FROM	111:56:53.862 TO	112:21:19.681
FILE 1 COPIED	2397 RECORDS FROM	112:21:22.679 TO	112:01:19.509

FILE 1 COPIED	7	RECORDS FROM	113:11:22.767	TO	113:11:25.763
FILE 1 COPIED	837	RECORDS FROM	113:11:25.762	TO	113:16:24.764
FILE 1 COPIED	1	RECORDS FROM	113:16:24.762	TO	113:16:25.762
FILE 1 COPIED	5	RECORDS FROM	113:16:25.022	TO	113:16:33.016
FILE 1 COPIED	1025	RECORDS FROM	113:16:27.016	TO	113:33:41.194
FILE 1 COPIED	3552	RECORDS FROM	113:57:56.045	TO	114:57:03.192
FILE 1 COPIED	192	RECORDS FROM	114:57:03.191	TO	115:03:17.039
FILE 1 COPIED	4	RECORDS FROM	115:03:18.498	TO	115:03:22.034
FILE 1 COPIED	1834	RECORDS FROM	115:03:25.033	TO	115:31:46.531
FILE 1 COPIED	718	RECORDS FROM	115:54:05.438	TO	116:06:01.919
FILE 1 COPIED	2136	RECORDS FROM	116:06:58.369	TO	116:42:32.159
FILE 1 COPIED	60	RECORDS FROM	116:52:49.551	TO	116:53:48.574
FILE 1 COPIED	57	RECORDS FROM	116:53:51.601	TO	116:54:47.556
FILE 1 COPIED	45	RECORDS FROM	116:54:49.555	TO	116:55:33.520
FILE 1 COPIED	55	RECORDS FROM	116:55:53.504	TO	116:56:47.461
FILE 1 COPIED	119	RECORDS FROM	116:56:49.459	TO	116:58:47.365
FILE 1 COPIED	56	RECORDS FROM	116:58:49.364	TO	116:59:44.320
FILE 1 COPIED	53	RECORDS FROM	116:59:46.318	TO	117:00:38.277
FILE 1 COPIED	8	RECORDS FROM	117:00:40.275	TO	117:00:47.270
FILE 1 COPIED	119	RECORDS FROM	117:00:49.266	TO	117:02:47.174
FILE 1 COPIED	239	RECORDS FROM	117:02:43.173	TO	117:06:46.984
FILE 1 COPIED	119	RECORDS FROM	117:06:43.982	TO	117:03:46.888
FILE 1 COPIED	119	RECORDS FROM	117:03:43.386	TO	117:10:45.792
FILE 1 COPIED	119	RECORDS FROM	117:10:43.790	TO	117:12:46.696
FILE 1 COPIED	239	RECORDS FROM	117:12:43.695	TO	117:16:46.505
FILE 1 COPIED	119	RECORDS FROM	117:16:48.504	TO	117:18:46.410
FILE 1 COPIED	16	RECORDS FROM	117:18:48.408	TO	117:19:03.396
FILE 1 COPIED	1	RECORDS FROM	117:19:04.955	TO	117:19:04.955
FILE 1 COPIED	3	RECORDS FROM	117:19:07.392	TO	117:19:09.391
FILE 1 COPIED	215	RECORDS FROM	117:19:12.389	TO	117:22:46.219
FILE 1 COPIED	119	RECORDS FROM	117:22:46.217	TO	117:24:46.123
FILE 1 COPIED	119	RECORDS FROM	117:24:43.122	TO	117:26:46.028
FILE 1 COPIED	239	RECORDS FROM	117:26:43.026	TO	117:30:45.837
FILE 1 COPIED	103	RECORDS FROM	117:30:47.335	TO	117:32:30.753
FILE 1 COPIED	13	RECORDS FROM	117:32:33.751	TO	117:32:45.741
FILE 1 COPIED	119	RECORDS FROM	117:32:47.740	TO	117:34:45.646
FILE 1 COPIED	119	RECORDS FROM	117:34:47.644	TO	117:36:45.550
FILE 1 COPIED	119	RECORDS FROM	117:36:47.549	TO	117:38:45.455
FILE 1 COPIED	119	RECORDS FROM	117:38:47.453	TO	117:40:45.359
FILE 1 COPIED	10	RECORDS FROM	117:40:47.358	TO	117:40:56.351
FILE 1 COPIED	3928	RECORDS FROM	117:51:47.844	TO	118:57:14.703
FILE 1 COPIED	2576	RECORDS FROM	118:57:16.702	TO	119:40:13.035
FILE 1 COPIED	1373	RECORDS FROM	119:41:02.625	TO	120:03:53.527
FILE 1 COPIED	3319	RECORDS FROM	120:03:55.526	TO	120:59:13.543
FILE 1 COPIED	3	RECORDS FROM	120:59:14.881	TO	120:59:16.880
FILE 1 COPIED	62	RECORDS FROM	120:59:19.378	TO	121:00:21.829
FILE 1 COPIED	1994	RECORDS FROM	121:00:23.227	TO	121:33:37.243
FILE 1 COPIED	99	RECORDS FROM	121:33:39.242	TO	121:35:17.164
FILE 1 COPIED	8	RECORDS FROM	121:51:48.382	TO	121:51:55.377
FILE 1 COPIED	3415	RECORDS FROM	121:51:53.374	TO	122:48:49.663
FILE 1 COPIED	120	RECORDS FROM	122:48:51.663	TO	122:50:50.573
FILE 1 COPIED	56	RECORDS FROM	122:54:42.379	TO	122:55:37.337
FILE 1 COPIED	13	RECORDS FROM	122:55:39.333	TO	122:55:51.323
FILE 1 COPIED	341	RECORDS FROM	122:55:53.322	TO	123:01:55.035
FILE 1 COPIED	234	RECORDS FROM	123:01:58.032	TO	123:06:42.306
FILE 1 COPIED	231	RECORDS FROM	123:06:44.804	TO	123:11:25.572
FILE 1 COPIED	796	RECORDS FROM	123:11:26.581	TO	123:24:42.933
FILE 1 COPIED	603	RECORDS FROM	123:24:43.943	TO	123:33:06.310
FILE 1 COPIED	3971	RECORDS FROM	123:39:00.292	TO	124:45:07.133
FILE 1 COPIED	141	RECORDS FROM	124:50:49.846	TO	124:53:10.726

FILE 1 COPIED	25	RECORDS FROM	124:53:11.734	TO	124:53:11.734
FILE 1 COPIED	571	RECORDS FROM	124:53:42.709	TO	124:53:42.709
FILE 1 COPIED	273	RECORDS FROM	125:02:15.251	TO	125:02:15.251
FILE 1 COPIED	102	RECORDS FROM	125:07:49.037	TO	125:07:49.037
FILE 1 COPIED	231	RECORDS FROM	125:09:31.956	TO	125:13:24.761
FILE 1 COPIED	336	RECORDS FROM	125:13:25.770	TO	125:19:01.465
FILE 1 COPIED	613	RECORDS FROM	125:19:02.503	TO	125:29:16.007
FILE 1 COPIED	91	RECORDS FROM	125:29:17.015	TO	125:30:46.943
FILE 1 COPIED	231	RECORDS FROM	125:30:43.942	TO	125:34:40.740
FILE 1 COPIED	3	RECORDS FROM	125:34:41.757	TO	125:34:43.755
FILE 1 COPIED	3166	RECORDS FROM	125:41:55.423	TO	126:34:33.910
FILE 1 COPIED	1135	RECORDS FROM	127:12:24.096	TO	127:31:21.191
FILE 1 COPIED	177	RECORDS FROM	127:31:23.190	TO	127:34:19.050
FILE 1 COPIED	1850	RECORDS FROM	127:34:21.049	TO	128:05:09.582
FILE 1 COPIED	2204	RECORDS FROM	128:05:11.591	TO	128:41:52.833
FILE 1 COPIED	958	RECORDS FROM	128:43:00.530	TO	129:03:56.302
FILE 1 COPIED	119	RECORDS FROM	129:03:58.301	TO	129:05:56.717
FILE 1 COPIED	239	RECORDS FROM	129:05:58.715	TO	129:09:56.526
FILE 1 COPIED	119	RECORDS FROM	129:09:58.534	TO	129:11:56.440
FILE 1 COPIED	119	RECORDS FROM	129:11:58.439	TO	129:13:56.304
FILE 1 COPIED	239	RECORDS FROM	129:13:58.302	TO	129:17:56.123
FILE 1 COPIED	359	RECORDS FROM	129:17:58.121	TO	129:23:55.835
FILE 1 COPIED	479	RECORDS FROM	129:23:57.834	TO	129:31:55.453
FILE 1 COPIED	119	RECORDS FROM	129:31:57.452	TO	129:33:55.353
FILE 1 COPIED	4062	RECORDS FROM	129:33:57.356	TO	130:41:36.112
FILE 1 COPIED	32	RECORDS FROM	130:46:04.835	TO	130:47:26.819
FILE 1 COPIED	352	RECORDS FROM	130:47:29.313	TO	130:53:21.537
FILE 1 COPIED	1948	RECORDS FROM	130:53:24.535	TO	131:25:52.504
FILE 1 COPIED	6	RECORDS FROM	131:25:53.982	TO	131:25:58.678
FILE 1 COPIED	4324	RECORDS FROM	131:26:02.976	TO	132:38:04.553
FILE 1 COPIED	118	RECORDS FROM	132:52:02.369	TO	132:54:00.776
FILE 1 COPIED	119	RECORDS FROM	132:54:02.773	TO	132:56:00.679
FILE 1 COPIED	169	RECORDS FROM	132:56:02.679	TO	132:58:51.543
FILE 1 COPIED	68	RECORDS FROM	132:53:53.542	TO	133:00:00.489
FILE 1 COPIED	116	RECORDS FROM	133:00:03.477	TO	133:02:00.393
FILE 1 COPIED	119	RECORDS FROM	133:02:02.392	TO	133:04:00.293
FILE 1 COPIED	119	RECORDS FROM	133:04:02.296	TO	133:06:00.202
FILE 1 COPIED	199	RECORDS FROM	133:06:02.201	TO	133:09:21.035
FILE 1 COPIED	39	RECORDS FROM	133:09:22.043	TO	133:10:00.016
FILE 1 COPIED	377	RECORDS FROM	133:10:02.011	TO	133:16:12.690
FILE 1 COPIED	134	RECORDS FROM	133:16:19.710	TO	133:18:33.602
FILE 1 COPIED	84	RECORDS FROM	133:18:36.601	TO	133:19:59.535
FILE 1 COPIED	239	RECORDS FROM	133:20:01.533	TO	133:23:58.344
FILE 1 COPIED	352	RECORDS FROM	133:24:01.345	TO	133:29:53.054
FILE 1 COPIED	19	RECORDS FROM	133:29:54.063	TO	133:30:13.062
FILE 1 COPIED	3310	RECORDS FROM	133:41:01.551	TO	134:36:03.926
FILE 1 COPIED	166	RECORDS FROM	134:59:54.774	TO	135:02:40.642
FILE 1 COPIED	799	RECORDS FROM	135:02:42.641	TO	135:16:01.006
FILE 1 COPIED	1298	RECORDS FROM	135:16:04.004	TO	135:37:39.974
FILE 1 COPIED	3290	RECORDS FROM	135:40:17.859	TO	136:35:04.250
FILE 1 COPIED	993	RECORDS FROM	136:56:59.189	TO	137:13:30.401
FILE 1 COPIED	1301	RECORDS FROM	137:13:32.400	TO	137:35:11.369
FILE 1 COPIED	2404	RECORDS FROM	137:39:30.182	TO	138:19:31.275
FILE 1 COPIED	140	RECORDS FROM	138:19:37.270	TO	138:21:56.161
FILE 1 COPIED	660	RECORDS FROM	138:21:59.153	TO	138:32:57.540
FILE 1 COPIED	1077	RECORDS FROM	138:55:23.551	TO	139:13:20.697
FILE 1 COPIED	1	RECORDS FROM	139:13:22.695	TO	139:13:22.695
FILE 1 COPIED	117	RECORDS FROM	139:13:24.694	TO	139:15:20.602
FILE 1 COPIED	839	RECORDS FROM	139:15:22.600	TO	139:29:19.036
FILE 1 COPIED	232	RECORDS FROM	139:29:21.935	TO	139:33:12.752

FILE 1 COPIED	2649	RECORDS FROM	139:37:56.549	TO	140:22:03.452
FILE 1 COPIED	900	RECORDS FROM	140:22:05.451	TO	140:37:05.933
FILE 1 COPIED	5	RECORDS FROM	140:37:07.991	TO	140:37:11.942
FILE 1 COPIED	2911	RECORDS FROM	140:44:07.392	TO	141:32:37.006
FILE 1 COPIED	70	RECORDS FROM	141:34:08.024	TO	141:35:16.969
FILE 1 COPIED	43	RECORDS FROM	141:35:18.968	TO	141:36:05.930
FILE 1 COPIED	3613	RECORDS FROM	141:36:07.929	TO	142:36:23.065
FILE 1 COPIED	4335	RECORDS FROM	143:23:39.314	TO	144:35:52.505
FILE 1 COPIED	59	RECORDS FROM	144:35:56.371	TO	144:36:55.255
FILE 1 COPIED	397	RECORDS FROM	144:36:57.323	TO	144:43:33.849
FILE 1 COPIED	1298	RECORDS FROM	144:43:36.007	TO	145:05:12.946
FILE 1 COPIED	1036	RECORDS FROM	145:05:23.971	TO	145:22:38.152
FILE 1 COPIED	3	RECORDS FROM	145:22:49.977	TO	145:22:51.975
FILE 1 COPIED	3613	RECORDS FROM	145:28:43.864	TO	146:23:54.004
FILE 1 COPIED	167	RECORDS FROM	146:29:01.999	TO	146:31:48.854
FILE 1 COPIED	64	RECORDS FROM	146:31:49.863	TO	146:32:53.549
FILE 1 COPIED	5	RECORDS FROM	146:32:55.310	TO	146:32:59.203
FILE 1 COPIED	39	RECORDS FROM	146:33:02.805	TO	146:33:41.766
FILE 1 COPIED	199	RECORDS FROM	146:33:42.774	TO	146:37:00.617
FILE 1 COPIED	62	RECORDS FROM	146:37:05.613	TO	146:38:07.564
FILE 1 COPIED	1023	RECORDS FROM	146:38:10.561	TO	146:55:12.741
FILE 1 COPIED	22	RECORDS FROM	146:55:13.750	TO	146:55:35.733
FILE 1 COPIED	545	RECORDS FROM	146:55:38.730	TO	147:04:42.299
FILE 1 COPIED	945	RECORDS FROM	147:04:44.298	TO	147:20:27.549
FILE 1 COPIED	3451	RECORDS FROM	147:30:23.077	TO	148:27:51.344
FILE 1 COPIED	541	RECORDS FROM	148:32:56.098	TO	148:41:57.667
FILE 1 COPIED	1048	RECORDS FROM	148:41:59.666	TO	148:59:26.834
FILE 1 COPIED	1454	RECORDS FROM	148:59:28.833	TO	149:23:42.224
FILE 1 COPIED	1035	RECORDS FROM	149:23:43.689	TO	149:40:57.862
FILE 1 COPIED	119	RECORDS FROM	149:40:59.361	TO	149:42:57.767
FILE 1 COPIED	119	RECORDS FROM	149:42:59.765	TO	149:44:57.671
FILE 1 COPIED	119	RECORDS FROM	149:44:59.669	TO	149:46:57.575
FILE 1 COPIED	119	RECORDS FROM	149:46:59.574	TO	149:48:57.480
FILE 1 COPIED	1319	RECORDS FROM	149:48:59.478	TO	150:10:58.433
FILE 1 COPIED	359	RECORDS FROM	150:10:58.431	TO	150:16:56.149
FILE 1 COPIED	479	RECORDS FROM	150:16:58.147	TO	150:24:55.769
FILE 1 COPIED	95	RECORDS FROM	150:24:57.767	TO	150:26:31.693
FILE 1 COPIED	4577	RECORDS FROM	153:15:34.632	TO	154:31:43.981
FILE 1 COPIED	419	RECORDS FROM	154:31:51.979	TO	154:38:49.646
FILE 1 COPIED	407	RECORDS FROM	154:38:51.645	TO	154:45:37.321
FILE 1 COPIED	34	RECORDS FROM	154:45:39.319	TO	154:46:12.292
FILE 1 COPIED	1151	RECORDS FROM	154:46:14.291	TO	155:05:23.374
FILE 1 COPIED	3992	RECORDS FROM	155:14:25.943	TO	156:20:53.758
FILE 1 COPIED	21	RECORDS FROM	157:21:06.371	TO	157:21:26.355
FILE 1 COPIED	2069	RECORDS FROM	157:23:22.767	TO	157:57:50.115
FILE 1 COPIED	1421	RECORDS FROM	157:58:05.103	TO	158:21:44.968
FILE 1 COPIED	40	RECORDS FROM	158:26:15.753	TO	158:26:55.720
FILE 1 COPIED	56	RECORDS FROM	158:26:57.719	TO	158:27:53.674
FILE 1 COPIED	279	RECORDS FROM	158:27:55.673	TO	158:32:33.450
FILE 1 COPIED	520	RECORDS FROM	158:32:35.450	TO	158:41:14.036
FILE 1 COPIED	247	RECORDS FROM	158:41:16.035	TO	158:45:21.838
FILE 1 COPIED	111	RECORDS FROM	158:45:23.337	TO	158:47:13.750
FILE 1 COPIED	239	RECORDS FROM	158:47:15.748	TO	158:51:13.559
FILE 1 COPIED	119	RECORDS FROM	158:51:15.557	TO	158:53:13.463
FILE 1 COPIED	428	RECORDS FROM	158:53:15.461	TO	159:00:22.121
FILE 1 END					

209300 RECORDS WRITTEN ON OUTPUT FILE

AMERICAN SCIENCE AND ENGINEERING APPLIED ALPHA EXPERIMENT DATA REDUCTION SYSTEM

FILE 1 COPIED	2045 RECORDS FROM	150:23:04.992	TO	160:13:06.645
FILE 1 COPIED	654 RECORDS FROM	160:13:07.843	TO	160:24:01.122
FILE 1 COPIED	129 RECORDS FROM	160:24:03.122	TO	160:26:13.017
FILE 1 COPIED	2067 RECORDS FROM	160:26:16.016	TO	161:00:40.373
FILE 1 COPIED	78 RECORDS FROM	161:00:42.372	TO	161:01:59.311
FILE 1 COPIED	119 RECORDS FROM	161:20:42.418	TO	161:22:40.323
FILE 1 COPIED	119 RECORDS FROM	161:22:42.322	TO	161:24:40.223
FILE 1 COPIED	119 RECORDS FROM	161:24:42.226	TO	161:26:40.132
FILE 1 COPIED	119 RECORDS FROM	161:26:42.130	TO	161:28:40.036
FILE 1 COPIED	136 RECORDS FROM	161:28:42.034	TO	161:31:46.837
FILE 1 COPIED	52 RECORDS FROM	161:31:48.885	TO	161:32:39.844
FILE 1 COPIED	119 RECORDS FROM	161:32:41.843	TO	161:34:39.749
FILE 1 COPIED	119 RECORDS FROM	161:34:41.747	TO	161:36:39.653
FILE 1 COPIED	119 RECORDS FROM	161:36:41.651	TO	161:38:39.557
FILE 1 COPIED	239 RECORDS FROM	161:38:41.556	TO	161:42:39.366
FILE 1 COPIED	119 RECORDS FROM	161:42:41.365	TO	161:44:39.271
FILE 1 COPIED	119 RECORDS FROM	161:44:41.269	TO	161:46:39.176
FILE 1 COPIED	239 RECORDS FROM	161:46:41.174	TO	161:50:38.985
FILE 1 COPIED	119 RECORDS FROM	161:50:40.984	TO	161:52:38.890
FILE 1 COPIED	1444 RECORDS FROM	161:52:40.889	TO	162:16:42.749
FILE 1 COPIED	803 RECORDS FROM	163:19:19.766	TO	163:32:45.114
FILE 1 COPIED	29 RECORDS FROM	163:32:46.122	TO	163:33:16.039
FILE 1 COPIED	1 RECORDS FROM	163:33:17.093	TO	163:33:17.093
FILE 1 COPIED	38 RECORDS FROM	163:33:38.031	TO	163:34:17.045
FILE 1 COPIED	2055 RECORDS FROM	163:34:18.049	TO	164:08:31.423
FILE 1 COPIED	17 RECORDS FROM	164:20:36.841	TO	164:20:53.827
FILE 1 COPIED	220 RECORDS FROM	164:20:55.826	TO	164:24:34.652
FILE 1 COPIED	118 RECORDS FROM	164:24:36.651	TO	164:26:34.557
FILE 1 COPIED	239 RECORDS FROM	164:26:36.556	TO	164:30:34.367
FILE 1 COPIED	359 RECORDS FROM	164:30:36.365	TO	164:36:34.081
FILE 1 COPIED	359 RECORDS FROM	164:36:36.030	TO	164:42:33.796
FILE 1 COPIED	39 RECORDS FROM	164:42:35.794	TO	164:43:13.764
FILE 1 COPIED	79 RECORDS FROM	164:43:15.763	TO	164:44:33.701
FILE 1 COPIED	141 RECORDS FROM	164:44:35.699	TO	164:46:56.564
FILE 1 COPIED	6 RECORDS FROM	164:46:58.586	TO	164:47:03.581
FILE 1 COPIED	209 RECORDS FROM	164:47:05.580	TO	164:50:33.416
FILE 1 COPIED	1037 RECORDS FROM	164:50:35.414	TO	165:03:40.553
FILE 1 COPIED	719 RECORDS FROM	165:03:28.527	TO	165:21:25.955
FILE 1 COPIED	239 RECORDS FROM	165:21:27.953	TO	165:25:25.764
FILE 1 COPIED	964 RECORDS FROM	165:25:27.762	TO	165:41:29.997
FILE 1 COPIED	93 RECORDS FROM	165:41:31.996	TO	165:43:03.923
FILE 1 COPIED	591 RECORDS FROM	165:43:05.922	TO	165:52:55.456
FILE 1 COPIED	1279 RECORDS FROM	165:52:01.447	TO	166:14:18.440
FILE 1 COPIED	239 RECORDS FROM	166:14:54.400	TO	166:18:52.211
FILE 1 COPIED	119 RECORDS FROM	166:18:54.209	TO	166:20:52.116
FILE 1 COPIED	237 RECORDS FROM	166:20:54.114	TO	166:24:51.926
FILE 1 COPIED	119 RECORDS FROM	166:24:53.924	TO	166:26:51.830
FILE 1 COPIED	119 RECORDS FROM	166:26:53.829	TO	166:28:51.735
FILE 1 COPIED	119 RECORDS FROM	166:28:53.734	TO	166:30:51.640
FILE 1 COPIED	239 RECORDS FROM	166:30:53.639	TO	166:34:51.450
FILE 1 COPIED	119 RECORDS FROM	166:34:53.448	TO	166:36:51.355
FILE 1 COPIED	119 RECORDS FROM	166:36:53.353	TO	166:38:51.260
FILE 1 COPIED	358 RECORDS FROM	166:38:53.253	TO	166:44:50.975
FILE 1 COPIED	239 RECORDS FROM	166:44:52.973	TO	166:48:50.785
FILE 1 COPIED	479 RECORDS FROM	166:48:52.783	TO	166:56:50.404
FILE 1 COPIED	119 RECORDS FROM	166:56:52.403	TO	166:58:50.309
FILE 1 COPIED	119 RECORDS FROM	166:58:52.308	TO	167:00:50.214
FILE 1 COPIED	233 RECORDS FROM	167:00:52.213	TO	167:05:35.065
FILE 1 COPIED	87 RECORDS FROM	167:06:03.975	TO	167:07:29.906

FILE 1 COPIED	249	RECORDS FROM	167:07:31.004	TO	167:21:39.223
FILE 1 COPIED	2219	RECORDS FROM	169:03:33.437	TO	169:40:30.663
FILE 1 COPIED	8840	RECORDS FROM	169:47:43.313	TO	172:15:00.235
FILE 1 COPIED	627	RECORDS FROM	174:50:50.329	TO	175:10:15.325
FILE 1 COPIED	1439	RECORDS FROM	176:57:47.656	TO	177:21:44.494
FILE 1 COPIED	6	RECORDS FROM	177:21:46.494	TO	177:21:51.490
FILE 1 COPIED	129	RECORDS FROM	177:32:23.979	TO	177:34:31.876
FILE 1 COPIED	99	RECORDS FROM	177:34:32.875	TO	177:36:10.797
FILE 1 COPIED	148	RECORDS FROM	177:36:12.795	TO	177:38:29.678
FILE 1 COPIED	109	RECORDS FROM	177:38:40.756	TO	177:40:23.590
FILE 1 COPIED	222	RECORDS FROM	177:40:29.589	TO	177:44:10.412
FILE 1 COPIED	49	RECORDS FROM	177:44:12.410	TO	177:45:00.373
FILE 1 COPIED	99	RECORDS FROM	177:45:01.451	TO	177:46:39.294
FILE 1 COPIED	91	RECORDS FROM	177:46:40.452	TO	177:48:10.220
FILE 1 COPIED	1724	RECORDS FROM	177:48:12.218	TO	178:16:56.195
FILE 1 COPIED	336	RECORDS FROM	178:17:08.823	TO	178:22:44.557
FILE 1 COPIED	981	RECORDS FROM	178:22:46.556	TO	178:39:05.768
FILE 1 COPIED	634	RECORDS FROM	178:39:07.765	TO	178:50:30.217
FILE 1 COPIED	237	RECORDS FROM	178:56:21.032	TO	179:01:07.700
FILE 1 COPIED	1	RECORDS FROM	179:01:10.697	TO	179:01:10.697
FILE 1 COPIED	14	RECORDS FROM	179:02:08.650	TO	179:02:22.560
FILE 1 COPIED	1714	RECORDS FROM	179:02:31.532	TO	179:31:04.245
FILE 1 COPIED	359	RECORDS FROM	179:31:06.244	TO	179:37:03.955
FILE 1 COPIED	119	RECORDS FROM	179:37:05.954	TO	179:39:03.359
FILE 1 COPIED	119	RECORDS FROM	179:39:05.857	TO	179:41:03.762
FILE 1 COPIED	239	RECORDS FROM	179:41:05.761	TO	179:45:03.569
FILE 1 COPIED	119	RECORDS FROM	179:45:05.568	TO	179:47:03.473
FILE 1 COPIED	359	RECORDS FROM	179:47:05.471	TO	179:53:03.184
FILE 1 COPIED	359	RECORDS FROM	179:53:05.183	TO	179:59:02.896
FILE 1 COPIED	239	RECORDS FROM	179:59:04.894	TO	180:03:02.704
FILE 1 COPIED	2190	RECORDS FROM	180:03:04.702	TO	180:39:32.939
FILE 1 COPIED	3264	RECORDS FROM	181:02:45.812	TO	181:57:07.131
FILE 1 COPIED	298	RECORDS FROM	181:57:09.179	TO	182:02:05.942
FILE 1 COPIED	2865	RECORDS FROM	183:03:32.975	TO	183:51:14.675
FILE 1 COPIED	1826	RECORDS FROM	183:51:29.661	TO	184:21:58.186
FILE 1 COPIED	1	RECORDS FROM	184:22:00.133	TO	184:22:00.133
FILE 1 COPIED	79	RECORDS FROM	184:22:02.182	TO	184:23:19.680
FILE 1 COPIED	3	RECORDS FROM	184:23:21.113	TO	184:23:23.117
FILE 1 COPIED	505	RECORDS FROM	184:23:25.115	TO	184:31:50.710
FILE 1 COPIED	820	RECORDS FROM	184:31:52.703	TO	184:45:33.050
FILE 1 COPIED	3319	RECORDS FROM	185:04:22.137	TO	185:59:33.481
FILE 1 COPIED	436	RECORDS FROM	187:02:34.460	TO	187:09:50.109
FILE 1 COPIED	2914	RECORDS FROM	187:02:52.107	TO	187:53:22.733
FILE 1 COPIED	2627	RECORDS FROM	187:59:22.740	TO	188:43:09.644
FILE 1 COPIED	6120	RECORDS FROM	189:00:09.332	TO	190:42:07.960
FILE 1 COPIED	119	RECORDS FROM	190:52:00.499	TO	190:53:53.405
FILE 1 COPIED	239	RECORDS FROM	190:54:00.403	TO	190:57:53.213
FILE 1 COPIED	3013	RECORDS FROM	190:58:00.211	TO	191:43:10.811
FILE 1 COPIED	619	RECORDS FROM	191:51:03.674	TO	192:01:21.183
FILE 1 COPIED	239	RECORDS FROM	192:01:23.181	TO	192:05:20.992
FILE 1 COPIED	119	RECORDS FROM	192:05:22.991	TO	192:07:20.807
FILE 1 COPIED	119	RECORDS FROM	192:07:22.896	TO	192:09:20.802
FILE 1 COPIED	79	RECORDS FROM	192:09:22.890	TO	192:10:41.398
FILE 1 COPIED	38	RECORDS FROM	192:10:43.736	TO	192:11:20.707
FILE 1 COPIED	119	RECORDS FROM	192:11:22.705	TO	192:13:20.612
FILE 1 COPIED	119	RECORDS FROM	192:13:22.610	TO	192:15:20.517
FILE 1 COPIED	119	RECORDS FROM	192:15:22.515	TO	192:17:20.421
FILE 1 COPIED	132	RECORDS FROM	192:17:22.420	TO	192:19:33.316
FILE 1 COPIED	56	RECORDS FROM	192:19:35.314	TO	192:20:30.271
FILE 1 COPIED	15	RECORDS FROM	192:20:32.269	TO	192:20:46.253

FILE 1 COPIED	155	RECORDS	FROM	192:20:51.254	TO	192:23:25.132
FILE 1 COPIED	132	RECORDS	FROM	192:23:27.139	TO	192:25:44.022
FILE 1 COPIED	3	RECORDS	FROM	192:25:46.029	TO	192:25:49.007
FILE 1 COPIED	2	RECORDS	FROM	192:25:50.016	TO	192:25:51.015
FILE 1 COPIED	92	RECORDS	FROM	192:25:54.014	TO	192:27:24.941
FILE 1 COPIED	119	RECORDS	FROM	192:27:26.949	TO	192:29:24.345
FILE 1 COPIED	239	RECORDS	FROM	192:29:26.845	TO	192:33:24.656
FILE 1 COPIED	39	RECORDS	FROM	192:33:26.654	TO	192:34:04.624
FILE 1 COPIED	2778	RECORDS	FROM	192:46:59.011	TO	193:33:13.802
FILE 1 COPIED	447	RECORDS	FROM	193:33:15.890	TO	193:40:42.446
FILE 1 COPIED	230	RECORDS	FROM	193:40:44.445	TO	193:44:33.265
FILE 1 COPIED	749	RECORDS	FROM	193:44:35.263	TO	193:57:02.674
FILE 1 COPIED	142	RECORDS	FROM	193:57:31.651	TO	193:59:52.540
FILE 1 COPIED	2513	RECORDS	FROM	195:21:57.624	TO	196:03:54.127
FILE 1 COPIED	611	RECORDS	FROM	196:46:18.613	TO	196:56:23.125
FILE 1 COPIED	29	RECORDS	FROM	196:56:31.123	TO	196:56:59.101
FILE 1 COPIED	3324	RECORDS	FROM	196:57:01.099	TO	197:52:21.456
FILE 1 COPIED	3060	RECORDS	FROM	198:42:48.050	TO	199:33:45.593
FILE 1 COPIED	774	RECORDS	FROM	200:30:54.353	TO	200:42:37.733
FILE 1 COPIED	6341	RECORDS	FROM	200:42:11.266	TO	202:23:46.174
FILE 1 COPIED	433	RECORDS	FROM	203:14:55.947	TO	203:22:57.535
FILE 1 COPIED	17	RECORDS	FROM	203:23:00.555	TO	203:23:16.543
FILE 1 COPIED	23	RECORDS	FROM	203:23:18.541	TO	203:23:40.523
FILE 1 COPIED	333	RECORDS	FROM	203:23:41.849	TO	203:30:06.202
FILE 1 COPIED	1	RECORDS	FROM	203:33:31.037	TO	203:33:31.037
FILE 1 COPIED	1116	RECORDS	FROM	203:33:34.034	TO	203:52:03.132
FILE 1 COPIED	1318	RECORDS	FROM	203:52:10.131	TO	204:14:06.063
FILE 1 COPIED	666	RECORDS	FROM	204:24:09.572	TO	204:35:14.033
FILE 1 COPIED	631	RECORDS	FROM	204:44:53.557	TO	204:56:13.005
FILE 1 COPIED	684	RECORDS	FROM	205:43:59.428	TO	206:00:21.871
FILE 1 COPIED	631	RECORDS	FROM	206:10:41.366	TO	206:22:00.810
FILE 1 COPIED	56	RECORDS	FROM	206:26:13.605	TO	206:27:03.560
FILE 1 COPIED	37	RECORDS	FROM	206:27:13.555	TO	206:27:40.526
FILE 1 COPIED	119	RECORDS	FROM	206:27:51.524	TO	206:29:49.429
FILE 1 COPIED	52	RECORDS	FROM	206:29:51.426	TO	206:30:42.386
FILE 1 COPIED	66	RECORDS	FROM	206:46:09.627	TO	206:47:14.574
FILE 1 COPIED	100	RECORDS	FROM	206:47:16.572	TO	206:48:56.491
FILE 1 COPIED	78	RECORDS	FROM	206:49:57.443	TO	206:51:14.373
FILE 1 COPIED	31	RECORDS	FROM	206:51:16.376	TO	206:51:46.660
FILE 1 COPIED	707	RECORDS	FROM	206:53:10.282	TO	207:04:55.708
FILE 1 COPIED	405	RECORDS	FROM	207:14:39.231	TO	207:21:22.903
FILE 1 COPIED	241	RECORDS	FROM	207:21:51.879	TO	207:25:51.683
FILE 1 COPIED	26	RECORDS	FROM	207:25:53.682	TO	207:26:13.661
FILE 1 COPIED	573	RECORDS	FROM	207:37:07.132	TO	207:46:33.667
FILE 1 COPIED	65	RECORDS	FROM	207:46:40.665	TO	207:47:44.613
FILE 1 COPIED	173	RECORDS	FROM	207:53:11.102	TO	208:01:02.962
FILE 1 COPIED	500	RECORDS	FROM	208:01:04.960	TO	208:09:23.554
FILE 1 COPIED	682	RECORDS	FROM	208:19:32.059	TO	208:30:52.505
FILE 1 COPIED	674	RECORDS	FROM	208:41:12.999	TO	208:52:25.452
FILE 1 COPIED	5	RECORDS	FROM	209:24:15.831	TO	209:24:19.877
FILE 1 COPIED	3	RECORDS	FROM	209:24:21.876	TO	209:24:23.614
FILE 1 COPIED	5	RECORDS	FROM	209:24:25.872	TO	209:24:27.869
FILE 1 COPIED	2	RECORDS	FROM	209:24:32.867	TO	209:24:33.866
FILE 1 COPIED	1	RECORDS	FROM	209:24:36.863	TO	209:24:36.863
FILE 1 COPIED	642	RECORDS	FROM	209:24:41.859	TO	209:35:22.338
FILE 1 COPIED	2	RECORDS	FROM	209:45:05.863	TO	209:45:06.863
FILE 1 COPIED	13	RECORDS	FROM	209:45:08.861	TO	209:45:20.851
FILE 1 COPIED	1	RECORDS	FROM	209:45:22.850	TO	209:45:22.850
FILE 1 COPIED	4	RECORDS	FROM	209:45:24.843	TO	209:45:27.845
FILE 1 COPIED	712	RECORDS	FROM	209:45:29.844	TO	209:57:20.267

FILE 1 COPIED	9 RECORDS FROM	210:06:42.805	TO	210:06:55.799
FILE 1 COPIED	44 RECORDS FROM	210:06:55.797	TO	210:07:41.762
FILE 1 COPIED	664 RECORDS FROM	210:07:43.760	TO	210:13:46.223
FILE 1 COPIED	203 RECORDS FROM	210:29:01.724	TO	210:32:23.561
FILE 1 COPIED	477 RECORDS FROM	210:32:25.559	TO	210:40:20.364
FILE 1 COPIED	1 RECORDS FROM	210:49:52.691	TO	210:49:52.691
FILE 1 COPIED	2 RECORDS FROM	210:49:53.710	TO	210:49:54.702
FILE 1 COPIED	2 RECORDS FROM	210:49:56.793	TO	210:49:57.707
FILE 1 COPIED	352 RECORDS FROM	210:49:59.705	TO	210:55:50.421
FILE 1 COPIED	406 RECORDS FROM	210:55:52.419	TO	211:02:37.092
FILE 1 COPIED	2 RECORDS FROM	211:12:14.625	TO	211:12:15.624
FILE 1 COPIED	12 RECORDS FROM	211:12:17.622	TO	211:12:23.613
FILE 1 COPIED	649 RECORDS FROM	211:12:30.612	TO	211:23:18.088
FILE 1 EOF				

113580 RECORDS WRITTEN ON OUTPUT FILE